



Aalborg Universitet

AALBORG UNIVERSITY
DENMARK

Enhancing efficacy of photodynamic therapy with pretreatment

Searle, Tamara; Al-Niaimi, Firas; Ali, Faisal R

Published in:
Dermatologic Therapy

DOI (link to publication from Publisher):
[10.1111/dth.14129](https://doi.org/10.1111/dth.14129)

Publication date:
2020

Document Version
Accepted author manuscript, peer reviewed version

[Link to publication from Aalborg University](#)

Citation for published version (APA):
Searle, T., Al-Niaimi, F., & Ali, F. R. (2020). Enhancing efficacy of photodynamic therapy with pretreatment. *Dermatologic Therapy*, 33(6), [e14129]. <https://doi.org/10.1111/dth.14129>

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

Take down policy

If you believe that this document breaches copyright please contact us at vbn@aub.aau.dk providing details, and we will remove access to the work immediately and investigate your claim.

Enhancing efficacy of photodynamic therapy with pretreatment

Authors: Tamara Searle¹; Firas Al-Niaimi,² Faisal R. Ali^{3,4}

Institutions: ¹University of Birmingham Medical School, Birmingham, UK

² Department of Dermatology, Aalborg University Hospital, Aalborg, Denmark.

³Vernova Healthcare Community Interest Company, Macclesfield, UK.

⁴St John's Institute of Dermatology, Guy's and St Thomas' NHS Foundation Trust, Great Maze Pond, London SE1 9RS, UK.

*Corresponding author: Dr Faisal Ali Email: f.r.ali.01@cantab.net

Keywords: ablative fractional laser technologies, erbium-doped yttrium aluminium garnet laser, photodynamic therapy, photosensitiser

Running head: Photodynamic therapy with pretreatment

Word count (excluding title page and references): 191

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/dth.14129

Consent for publication: All authors have approved this final submitted version of the manuscript and consent to its submission for consideration of publication

Conflicts of interest: none

Funding information: none

Dear Professor Lotti,

We read with interest the review by Queirós and colleagues¹ on the wide range of uses of photodynamic therapy (PDT) in dermatology. The authors appear to have overlooked the use of laser-assisted drug delivery and microneedling for enhancing penetration of photosensitising agents during PDT.² The treatment of actinic keratoses with ablative fractional laser technologies (AFXL) prior to PDT allows for greater penetration and hence efficacy of treatments with photosensitisers including methyl aminolevulinate (MAL) and aminolevulinic acid.³ Combinations of microneedling, photodynamic therapy and MAL was used effectively in the treatment of recalcitrant actinic keratosis.⁴ Erbium-doped yttrium aluminium garnet AFXL undertaken before MAL-PDT was more efficacious for the treatment of Bowen's disease than a MAL-PDT alone.⁵ In addition, AFXL pre-treatment prior to PDT in the treatment of basal cell carcinomas is thought to create channels to allow greater penetration of the active photosensitising agent.² The potential utility of AFXL-assisted PDT in patients with actinic cheilitis has been highlighted in a large cohort of patients.⁶ Practitioners undertaking PDT should consider the addition of pre-

treatment interventions such as AFXL and microneedling to enhance the delivery of photosensitising agents and improve patient outcomes.

References

- (1) Queirós C, Garrido PM, Maia Silva J, Filipe P. Photodynamic therapy in Dermatology: beyond current indications. *Dermatol Ther*. 2020; doi: 10.1111/dth.13997.
- (2) Ali FR, Al-Niaimi F. Laser-assisted drug delivery in dermatology: from animal models to clinical practice. *Lasers Med Sci*. 2016;31(2):373-81.
- (3) Song HS, Jung SE, Jang YH, *et al*. Fractional carbon dioxide laser-assisted photodynamic therapy for patients with actinic keratosis. *Photodermatol Photoimmunol Photomed*. 2015;31(6):296-301.
- (4) Iriarte C, Awosika O, Rengifo-Pardo M, Ehrlich A. Review of applications of microneedling in dermatology. *Clin Cosmet Investig Dermatol*. 2017;10:289.
- (5) Ko DY, Kim KH, Song KH. A randomized trial comparing methyl aminolaevulinate photodynamic therapy with and without Er: YAG ablative

fractional laser treatment in Asian patients with lower extremity Bowen disease: results from a 12-month follow-up. *Br J Dermatol.* 2014;170(1):165-72.

- (6) Markopoulos A, Albanidou-Farmaki E, Kayavis I. Actinic cheilitis: clinical and pathologic characteristics in 65 cases. *Oral Dis.* 2004;10(4):212-6.